TITLE:	E-COMMERCE BRIEF: HUNGARY
SUBJECT COUNTRY(IES):	HUNGARY
POST OF ORIGIN:	BUDAPEST
SERIES:	INTERNATIONAL MARKET INSIGHT (IMI)
ITA INDUSTRY CODE:	CSV, TES
DATE OF REPORT (YYMMDD):	00/08/30
DELETION DATE (YYMMDD):	01/08/30
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OFFICER'S TITLE:	COMMERCIAL ATTACHE
NUMBER OF PAGES:	

1. Summary

With nine percent PC penetration, seven percent Internet penetration, 22 percent mobile phone penetration and about 39 percent fixed phone line penetration, Hungary has been ranked 30th of 60 countries in terms of e-business readiness by the Economist Intelligence Unit. Over 140 companies in Hungary currently practice business-to-consumer (B2C) e-commerce and their projected transactions will total USD 1.6 million in 2000 and USD 8.1 million in 2002. Currently, over 85 percent of B2C purchases are transacted with payment collected on delivery. Business-to-business (B2B) e-commerce is transacted almost exclusively through Electronic Data Interchange (EDI) systems. It is expected that in three years, Internet based solutions (WEB-EDI and Internet/EDI systems) will obtain a larger share. Estimates indicate that total B2B e-commerce may reach USD 470 million in 2000 and USD 1.363 billion in 2002. Currently, there are four banks providing e-banking in Hungary; this number in expected to grow to 15 by the end of 2001. E-government and e-procurement have not developed in Hungary yet and virtual market places are just in the process of being established. Legislation concerning such e-business aspects as authorization, authentication, protection of data, etc. is not yet in place.

2. Market Opportunities

Business-to-Consumer (B2C) E-commerce

There are currently about 140 Hungarian companies selling their products over the Internet.

In 1999, the estimated size of this type of commerce was HUF 160 million (USD 590,000) or less than one percent of total retail sales. The twenty largest virtual shops account for the majority of this turnover. B2C transactions are estimated to reach HUF 440 million (USD 1.6 million) in 2000; HUF 975 million (USD 3.6 million) in 2001; and HUF 2.2 billion (USD 8.1 million) in 2002.

Product profiles on B2C e-commerce websites (in percent of all stores):

Books, CD-ROMs	34 %
Computer HW/SW	21 %
Virtual Malls	11 %
Consumer electronics	6 %
Online auctions	5 %
Home equipment	5 %
Car equipment	3 %
Other	15 %

Ninety-four percent of Internet stores use the Hungarian Postal service for home delivery of their products. About 90 percent of B2C purchases are transacted with payment collected on delivery whereas payment by bank card is available in only 10 percent of online stores. There is only one bank (Inter-Europa Bank) that provides a Secure Electronic Transaction (SET) system.

One of the newest B2C innovations in Hungary is the "M-commerce" project begun by Westel (a GSM mobile service provider)in cooperation with Coca-Cola. The project uses mobile phone calls to purchase beverages from select Coca-Cola dispensing machines.

Business-to-Business (B2B) E-commerce

According to a survey by Carnation Strategic Internet consulting, B2B E-commerce in Hungary is transacted almost exclusively through EDI systems. EDI was introduced in Hungary in 1996, had 400 users by the end of 1999, and may reach 1,500 applications in 2002. These are mainly in the retail, automotive, and "Fast Moving Consumer Goods" sectors. It is expected that over the next three years, Internet based solutions (WEB-EDI and Internet/ EDI systems) will obtain a larger share of B2B transactions.

Business-to-Business e-commerce in Hungary (HUF billions) (1 USD=284 HUF)

Application/year	2000	2001	2002
EDI	120.8	193.2	299.5
Web-EDI and Internet-EDI	12.1	19.3	71.9
Other web applications	2.4	7.1	15.8
Total	135.3	219.6	387.2

A consortium made up of MATAV (Hungarian Telecommunications Co.), OTP (the Hungarian National Savings Bank), Andersen Consulting and Compaq Computer Hungary Co. announced that it would establish a B2B horizontal electronic marketplace (technology supplied by the U.S. company, Commerce One) before the end of 2000. The founders believe

that within the first several months several hundred Hungarian companies could join this e-trading marketplace.

Another consortium of Hewlett-Packard, Oracle and PricewaterhouseCoopers registered on August 1, 2000 an electronic marketplace to sell computer hardware, office equipment and services. This consortium, known as First Hungarian E-Market Co. Ltd., expects to have USD 100 million turnover in the first year of operation. After a test period in September, the company will start in October, 2000 thus creating competition for the above-mentioned consortium.

Hewlett-Packard Hungary is also working with Triad Co. Ltd. (the Hungarian representative of US-based CheckFree) to launch and all-inclusive electronic bill presentation and payment system using CheckFree's technology for use primarily by telecommunications and utility companies.

There are two groups currently planning or offering web-based auction services in Hungary. The first, Global Group Purchase Program (owned by U.S. investors and consultants), will concentrate on improving market growth for Hungarian small and medium size companies. The second group, the Hungarian Investment and Trade Development Agency in cooperation with the U.S. firm FreeMarkets, introduced an auction site for Hungarian suppliers in early 2000. Hungarian companies may register themselves and join the 4,000 suppliers from 50 countries already participating in the program. Currently 12 companies have registered and FreeMarkets hopes to recruit about 500 Hungarian suppliers from industry sectors including machinery, die casting, electrical and electronic components, and the plastic and rubber industry.

E-government/e-procurement

The Prime Minister's Office, which is responsible for coordinating government-wide IT projects, is working on a government portal providing information and data on the country, investment opportunities, and news. In September 2000, a public tender for the project will be published with the portal expected to be operational by the end of 2000. It is envisioned that this portal could be later developed as a gateway to electronic government but there is no indication as to when this eventuality might occur.

The newly appointed IT Ministerial Commissioner of the Prime Minister's Office is actively pursuing development of e-procurement and he envisages an operational system in place by January 31, 2002.

Banking and Financial Services

There are currently four banks (Inter-Europa Bank, OTP-The National Savings Bank, Raffeisen and Citibank) in Hungary offering e-banking services. As of May 2000, they had 22,000 e-banking customers. By the end of 2000, 6 banks will offer e-banking services. Approximately 41,100 customers are expected to use this service by the end of 2000 with growth expected to 15 banks and 112,100 customers by the end of 2001.

Budapest Bank (with GE Capital as a strategic shareholder) will invest USD 8 million in e-commerce over the next three years. Already in 2000, the bank has spent USD 2 million on business online developments. Budapest Bank was one of the first banks to offer MobilBank services in Hungary. The bank's Teleinvest service, launched in early 1999, allows clients to purchase unit trust certificates through mobile phones. More than 5,000 clients now use this service. Budapest Bank is considering using WAP (Wireless Application Protocol) technology, but transactions are presently made with SMS (short messages) technology.

Compaq Computer Hungary, Microsoft Hungary and Hypermedia Systems (HMS) have teamed up to sell an Internet banking system. (The Hyperbank Starter pack, developed by HMS, has been operating at Inter-Europa Bank for two years. The strategic alliance has been concluded to make the system available as a turn-key system to any Hungarian or international bank planning to introduce Internet banking services.

Currently there are only a few brokerage firms using the Internet for online trade with the Budapest Stock Exchange (BUX). Procent Investment Inc. started services in September 1998 at www.procent.hu. According to a recent agreement with Concorde Ertekpapir (Stock) Rt., 10,000 clients of Procent will be taken over by Concorde subject to the approval of the State Supervision of the Financial Organizations. Elso InternetBroker Kft. (First Internet Brokerage Co. Ltd.) began operations in November 1998 and merged with Concorde (www.cd.hu) in October 1999. The Quaestor Financial Group (https://webbroker.quaestor.hu) and Equitas Broker Rt. (www.equitas.hu) started e-brokerage in November 1999.

3. Information Communication Technology Overview

The estimated number of regular Internet users in Hungary is between 700,000-1,000,000, in a country with a population of 10 million. According to a survey conducted by Carnation Internet Consulting in October 1999; 360,000 people have Internet access from schools, 236,000 are corporate and governmental users, and 221,000 are home and small office users (with an overlap of 104,000 this equals 713,000 users). While the number of private Internet subscribers is expected to grow annually by 50-70 percent, the number of business users doubles yearly. Nine percent PC penetration (113,000 PCs sold in 1999) is considered to be low in comparison to the mobile phone penetration of 22 percent and 38.6 percent fixed line penetration in MATAV service areas (80 percent of the country). Of the 3.7 million fixed lines at the end of 1999, 137,000 were ISDN lines and the digitalization rate of the network is 75.7 percent.

MATAV, the Hungarian Telecommunications Co. has a monopoly on long distance and international public switched services until the end of 2001. Local telephone operators service twenty percent of the country with a monopoly on local and long distance calls until November 2002. MATAV plans to launch its ADSL (asymmetric digital subscriber lines) service in the autumn of 2000 which its competitors are suggesting will lead to MATAV dominance in the business communication market unless action is taken by the Hungarian Communications Authority (HIF) to compel MATAV to provide ADSL services to other telecom providers at a wholesale price. One of the local telephone operators, Vivendi Telecom Hungary also intends to launch its commercial ADSL service in the autumn of 2000. In addition to competing with MATAV for voice communications after the liberalization of the telecommunication market in 2002, almost all alternative telecom service providers are positioned in the internet business as well. Most have either acquired an Internet service

provider or are providing internet service through cable television. Both GSM service providers introduced WAP services, and Westel Mobile Telecommunications Rt. will provide high speed data transmission within mobile networks through its new General Packet Radio Service (GPRS) as of late 2000.

About thirty Internet Service Providers (ISPs) provide access services to the approximately 120,000 dial-up subscribers and to corporate accounts through VSAT, ISDN or managed leased lines. Three major ISPs (MATAVNet, PSINet Elender, and GTS Datanet) cover 85 percent of the market. Two of these have US interests, PSINet Elender (30 percent market share) and GTS Datanet (15 percent market share). New entrants into the Hungarian ISP market are UUNet, Planet Internet Service Provider Inc., and the Swedish Telecom, Telia.

Internet Services including e-commerce are not regulated by any single specific law in Hungary, but several different laws affect different aspects of the sector (e.g. Telecom, Media, Companies, Taxes, Customs, Intellectual Property Rights (IPR), Advertisements, Home Shopping, 17/1999 (II.5) Government Decree on Distance Contract Directive). The following questions however are not regulated:

- E-commerce (including services, electronic contracts, authentication of digital signatures, encryption, and liability of the intermediary)
- Management of data, data access, use and misuse of data
  (data protection, IPR, domain names, protection of data bases, regulation of content)
- Control of digital gateways
- Issues related to data traffic across the borders (settlement of legal disputes, tax and tariffs issues)

The law on digital signature is being drafted and is expected to be passed by the Parliament in early 2001. Netlock Co. Ltd. is the only company currently engaged in authentication. An Irish firm, Baltimore Technologies, and the U.S. company, VeriSign, seem to have good potentials to gain market positions in Hungary as Certificate Authorities.